

UNI

VERSITI

THE 11TH INTERNATIONAL INNOVATION, INVENTION & DESIGN COMPETITION INDES 2022

EXTENDED ABSTRACTS BOOK



© Unit Penerbitan UiTM Perak, 2023

All rights reserved. No part of this publication may be reproduced, copied, stored in any retrieval system or transmitted in any form or by any means; electronic, mechanical, photocopying, recording or otherwise; without permission on writing from the director of Unit Penerbitan UiTM Perak, Universiti Teknologi MARA, Perak Branch, 32610 Seri Iskandar Perak, Malaysia.

Perpustakaan Negara Malaysia

Cataloguing in Publication Data

No e-ISSN: e-ISSN 2756-8733



Cover Design : Nazirul Mubin Mohd Nor Typesetting : Wan Nurul Fatihah binti Wan Ismail

EDITORIAL BOARD

Editor-in-Chief

Wan Nurul Fatihah binti Wan Ismail

Editors

Nor Hazirah Mohd Fuat Noor Fazzrienee J Z Nun Ramlan Dr Nuramira Anuar Dr Shazila Abdullah Halimatussaadiah Iksan Iza Faradiba Mohd Patel Jeyamahla Veeravagu Mahfuzah Rafek Nor Nadia Raslee Nurul Nadwa Ahmad Zaidi Peter Francis Zarinatun Ilyani Abdul Rahman Zarlina Mohd Zamari

The 11th International Innovation, Invention and Design Competition 2022

Organised by

Office of Research, Industrial Linkages, Community & Alumni Networking (PJIM&A) Universiti Teknologi MARA Perak Branch

and

Academy of Language Study Universiti Teknologi MARA Perak Branch



QSC+ 2.0: AN IMPROVED VERSION OF QUICK CALCULATOR GUIDELINE FOR BASIC STATISTICS

Hazfina Mohamed Idris¹, Nurain Johar², Firus Musfirah Poli³, Nor Hilaliyah Mohd Jamil⁴, Fakhira Jafri⁵, Grace Lau Chui Ting⁶

> ^{1,4,6} Faculty of Computer & Mathematical Sciences, Universiti Teknologi MARA Sarawak Branch, Mukah Campus

²Faculty of Applied Sciences, Universiti Teknologi MARA Sarawak Branch, Mukah Campus

³Faculty of Applied Sciences, Universiti Teknologi MARA Sarawak Branch, Mukah Campus

⁵Academy of Language Studies, Universiti Teknologi MARA Sarawak Branch, Mukah Campus

E-mail: hazfina@uitm.edu.my

ABSTRACT

Mathematics and statistics are obligatory subjects in most courses of a university. It is essential for students to have the skills to fully utilise the function of a scientific calculator as it is an important tool that will help them to solve mathematics and statistical problems. However, they will not be able to fully utilise a scientific calculator if there is no clear guideline on how to use the functions built in the calculator. QSC+ version 2.0 was developed as one of the informative platforms to guide students in using scientific calculator to solve basic statistical calculations. This online based platform provides its users guidelines through the step-by-step videos and learning check exercises to test their understanding. Thus, we have collected feedback from basic statistics course students in terms of their satisfaction using the QSC+2.0 platform. Questionnaires were distributed to the selected 26 respondents after they had browsed the platform. All the respondents (57% strongly agree, 43% agree) found the platform attractive. However, 4% of the respondents faced problems while using the platform. Additionally, from the gathered data, all the respondents would recommend the QSC+2.0 to others, and they believed that the platform is useful for learning basic statistics. In conclusion, the upgraded QSC+2.0 is a beneficial and feasible platform to provide knowledge sharing sessions for the students and concurrently convenient for the educators in assisting them to teach basic statistics.

Keyword: scientific calculator, basic statistics, teaching aids.

1. INTRODUCTION

Statistical knowledge is an important skill for students to prepare themselves for quantitative demands. For that reason, we can see most of the academic programmes development committee will establish a policy to include mathematics and statistics courses in their study plan either as a main or elective subjects. Students from various disciplines backgrounds whether from the fields of science, business management or agrotechnology will learn at least a basic knowledge of mathematics and statistics before they graduate. Gigerenzer et al., (2007) mentioned that statistical literacy is a necessary precondition for an educated citizenship in a technological democracy. By looking at a bigger picture, worlds nowadays are surrounded with



data that can help people to make evidence-based decisions in life and work and by having statistical knowledge, it can be advantageous to understand the uncertainty and its variation (MacGillivray et al., 2014). Before students can learn the in-depth knowledge of statistics, learning its basics is crucial as discussed by Jalajakshi and Myna (2022) who have highlighted the importance and contribution of statistics to data science and how it emerges as the most important factor to solve realistic problems which contain huge amounts of data processing.

Technological industry has been evolving tremendously during the new millennium and creating new inventions. We have already witnessed the innovation and the development from binary to scientific calculators. In fact, we can find various models of scientific calculators in the market with improved design and formula. The development of calculators in recent decades has been focusing on their use as educational devices, with the design of calculators heavily influenced by the needs of secondary school students (Pee & Boon, 2018). As scientific calculators have been part of important tools for learning mathematics and statistics, students must have the skills to fully utilise the function of a scientific calculator and this can be achieved by the proper guidelines on how to use it to solve basic statistical formulas.

Taneja et al. (2018) revealed that between the years of 2000 and 2017, self-learning is among the most methods that was researched and written about in journal articles significantly more often than other teaching methods. As e-learning and self-learning are very necessary in the tertiary level education environment and has become the recent highlight, the idea to have an informative platform for students to refer was discussed further. Students who are having difficulties using scientific calculators may affect their academic performance as discussed by Radzuan et al. (2021). Thus, this platform was developed as an improved version of QSC+ to serve both students and educators by providing them a trusted source for blended learning or even in the development of Massive Open Online Course (MOOC). The primary objective of this preliminary study was to gain feedback from students taking a basic statistics course as main users in terms of their satisfaction while browsing this platform.

2. METHODOLOGY

QSC+ version 2.0 platform was built and designed using a free website builder, Google Sites. Given that, students can easily access this platform by using their devices at their own convenience. The user-friendly interface with a proper navigator panel of this platform (Figure 1) will facilitate the users in solving basic statistics problems using a scientific calculator. The major upgrade of this version 2.0 platform is the selection of the scientific calculator model in which the user can choose either Casio fx-570MS, Casio fx-570ES Plus, or Casio fx-570EX model. Once the user taps on the preferred calculator model, a vertical toggle menu will appear with a selection of five different topics on the concept of basic statistics. The user will be directed to a new page containing videos that are linked from the YouTube Channel of the QSC+ 2.0 developer after they clicked on the topic of interest. The videos comprise the step-by-step explanations and guidelines on how to use the scientific calculator to solve the concept problem according to the chosen topic. On the navigation bar, there are three other menus; 'Test



Yourself!' was created to provide users with learning check exercises and they can further monitor their level of understanding. 'Feedback from Learners' was created to get feedback from users as a room for improvement of the platform while the 'Contact Us' menu was created so that users can contact the developers for any queries.



Figure 1 Interface Look on QSC+ Version 2.0 Platform

3. FINDINGS

A set of questionnaire forms was developed that consist of systematic questions and was given to the respondents. The questionnaire forms were composed of four questions concerning the user's satisfaction survey on QSC+ 2.0 platform. For each question, respondents were given answer options ranging from strongly disagree, disagree, agree, and strongly agree.

There were a total of 26 respondents that took part in this survey and the feedback can be seen in the pie chart shown in Figure 2. It was found that all respondents perceived this platform as attractive with 57% strongly agreeing and 43% answered. For the second question, the respondents were asked about the challenges or difficulties they were facing while using this platform. Most of the respondents provided positive feedback with 38% strongly agreeing and 58% agreeing that they were not facing any problem using this QSC+ 2.0 platform. However, 4% of the respondents provided feedback that they were facing some problems while using this platform.





Figure 2 Respondent Feedback

In general, all respondents would recommend this platform to others as they believe that this platform is useful for learning basic statistics. This can be seen from the respondents' feedback for questions 3 and 4 as most of them chose strongly agree and agree and none of them answered the opposite range. We are all aware that the readiness of this platform was still in the beginning level, but the first step is very crucial to have a complete package for this platform to fully establish. We believe that the feedback given by all respondents is crucial to improve this platform with new features to serve as a beneficial online platform in understanding the basic concept of statistics.

4. CONCLUSION

As a conclusion, QSC+ 2.0 is an improved version platform that provides informative guidelines on using scientific calculator. This new version of QSC+ 2.0 was developed with enhanced features with the addition of two new models of scientific calculator. With a total of three scientific calculators, it provides an optional view for users to choose. The preliminary study conducted among respondents from higher institution level students showed that they are satisfied with this platform as it is useful for learning basic statistics.

REFERENCES

Gigerenzer, G., Gaissmaier, W., Kurz-Milcke, E., Schwartz, L. M., & Woloshin, S. (2007). Helping

doctors and patients make sense of health statistics. Psychological Science in the Public

Interest, 8(2), 53–96.



- Jalajakshi, V., & Myna, A. N. (2022). Importance of statistics to data science. *Global Transitions Proceedings*.
- MacGillivray, H., Utts, J. M., Heckard, R. F. (2014). *Mind on Statistics (2nd ed.)*. Melbourne: Cengage Learning.
- Pee C. T., & Boon L. C. (2018). Mathematics Instruction: Goals, Tasks and Activities Yearbook
 2018: Designing and Implementing Scientific Calculator Tasks and Activities. Singapore:
 World Scientific Publisher.
- Radzuan, F. S., Kamarudin, N., Khambari, M. N. M., & Arsad, N. M. (2021). Impact of scientific calculators in mathematics among low-achieving students in a secondary school in Kajang, Selangor. *Pertanika Journal of Social Sciences & Humanities*, 29, 199-214.
- Taneja, P., & Safapour, E., & Kermanshachi, S. (2018). *Innovative higher education teaching and learning techniques: implementation trends and assessment approaches* [Paper presentation].
 2018 ASEE Annual Conference & Exposition, Salt Lake City, Utah. DOI 10.18260/1-2— 30669.

Pejabat Perpustakaan Librarian Office

Universiti Teknologi MARA Cawangan Perak Kampus Seri Iskandar 32610 Bandar Baru Seri Iskandar, Perak Darul Ridzuan, MALAYSIA Tel: (+605) 374 2093/2453 Faks: (+605) 374 2299





Prof. Madya Dr. Nur Hisham Ibrahim Rektor Universiti Teknologi MARA Cawangan Perak

Tuan,

PERMOHONAN KELULUSAN MEMUAT NAIK PENERBITAN UITM CAWANGAN PERAK MELALUI REPOSITORI INSTITUSI UITM (IR)

Perkara di atas adalah dirujuk.

2. Adalah dimaklumkan bahawa pihak kami ingin memohon kelulusan tuan untuk mengimbas (*digitize*) dan memuat naik semua jenis penerbitan di bawah UiTM Cawangan Perak melalui Repositori Institusi UiTM, PTAR.

3. Tujuan permohonan ini adalah bagi membolehkan akses yang lebih meluas oleh pengguna perpustakaan terhadap semua maklumat yang terkandung di dalam penerbitan melalui laman Web PTAR UiTM Cawangan Perak.

Kelulusan daripada pihak tuan dalam perkara ini amat dihargai.

Sekian, terima kasih.

"BERKHIDMAT UNTUK NEGARA"

Saya yang menjalankan amanah,

Setuju.

PROF. MADYA DR. NUR HISHAM IBRAHIM REKTOR UNIVERSITI TEKNOLOGI MARA CAWANGAN PERAK KAMPUS SERI ISKANDAR

SITI BASRIYAH SHAIK BAHARUDIN Timbalah Ketua Pustakawan

nar